Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class Period \_\_\_\_\_\_

The Border Problem: Changing the Size of the Grid

**Changing the Size of the Grid**  Yesterday we described 6 different methods for finding the number of squares on the border of a 10 × 10 grid. If we change the size of the grid, the numbers will change but the methods will still work.

**Find the number of squares on the border of each size grid. For each size grid, draw a simple diagram, and write a number expression.**

Method 1: Method 2:

12 × 12 grid 8 × 8 grid

Method 3: Method 4:

9 × 9 grid 15 × 15 grid

Method 5: Method 6:

20 × 20 grid 7 × 7 grid

**Function Rule** A function describes the relationship between two quantities. A function rule can be written as an equation of 2 variables. If we let represent the number of squares on each side of an × grid and if we let represent the number of border squares, then we can write a function rule for each method.

**Let represent the number of squares on each side of an grid. Let represent the number of border squares. Draw and label a simple diagram. Write an equation for each method. Check the equation for**

Method 1: Method 2:

× grid × grid

Method 3: Method 4:

× grid × grid

Method 5: Method 6:

× grid × grid